

ON
ADENOID VEGETATIONS
IN THE
NASO-PHARYNGEAL CAVITY:
THEIR
PATHOLOGY, DIAGNOSIS, AND TREATMENT.

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AMONG the permanent defects of speech there is one that claims attention, not only on account of its rather common occurrence—at least, with us in Denmark—but also on account of its frequent coincidence with a very marked defect of hearing. At a superficial glance this condition resembles a chronic cold; patients thus affected, being unable to pronounce the nasal sounds *m* or *n*, will say “cobbod” instead of “common,” “doze” or “loze” instead of “nose,” “sogg” for “song,” &c.; and, being likewise unable to breathe through the nose, they are compelled to keep the

mouth continually open. A closer examination, however, will soon show the difference—unless, indeed, there actually exists the complication of a chronic cold in the head. In the first place, then, the voice is singularly wanting in resonance, and as the nasal consonants cannot be pronounced, the speech sounds short, stuffed, “dead,” as I would propose to call it, which is very characteristic and unmistakeable. Then (although the mouth is kept open all the time) the patients often have a peculiar way of twisting and pouting their lips, toying with them, as it were, which adds greatly to the vacancy and stupidity of their look and countenance. The aspect of the nose differs, also, materially from that which we are accustomed to see in chronic colds of the head; for, instead of swelling and redness in and around the nostrils, we here find the nose thinned, flattened from side to side, and the nostrils collapsed and narrow on account of their long inactivity. The secretion of the Schneiderian membrane is often deficient.

Other symptoms requiring to be mentioned are a feeling of fulness in the upper part of the throat, resembling a foreign body behind the posterior nares. Sometimes patients on awaking in the morning discover some blood in the mouth; but oftener there is a copious secretion of a thick greenish or greyish mucus from the upper part of the throat, which may occasionally be seen gliding slowly down the posterior wall of the pharynx, and causing the patient to clear his throat frequently and violently.

The defect of hearing, which so often accompanies the “dead” pronunciation, is of great interest. In fact, very few patients affected with this peculiar way of speaking will be found who, although their hearing may appear normal for the time being, have not occasionally been troubled with tinnitus aurium and deafness, especially after taking cold. But frequently the accompanying defect of hearing is of a more serious and lasting character, viz. chronic catarrh of the tympanum, chronic discharge from the ears, or very troublesome and continual noises. The best opportunity, then, for observing this peculiar defect of speech will be among

ear patients. I have no doubt that a number of my colleagues have likewise observed such cases, and after successfully removing the swelling of the mucous membrane of the nose and throat, supposed to be the evident seat of the mischief, have been rather astonished to find that, after all, the speech was as bad as ever. The patient, tired of the protracted, often painful and still unsuccessful treatment, discontinues his attendance, and resigns himself to his malady. An instance of this kind led me to discover the true seat of the complaint. I had cleared the obstructed passage through the nose, removed the enlarged tonsils and the swelling of the throat and soft palate, but the manner of speaking remained as deficient as ever. The patient, a young lady, now underwent a regular course of training in pronunciation, but with no better result. She then came to me again. Having found rhinoscopy impracticable, I now passed my forefinger behind the soft palate up into the so-called "nasopharyngeal cavity," and was very much astonished to find this almost entirely filled up by *soft masses*, which, giving way to the finger, felt very much like a bunch of earthworms, and, hanging down from the roof of the pharynx, completely closed up the posterior nares. There was rather free bleeding during and for some minutes after this digital examination. These growths were quite new to me then, and I found no allusion made to them in any of the ancient or modern works on Surgery and Morbid Anatomy which I consulted. The symptoms before enumerated could undoubtedly be accounted for by the presence of the growths, but whether these were the real and only cause remained to be proved by their removal. After some fruitless attempts I at length succeeded in this by an operation which I shall presently describe. The result was most satisfactory; the voice became clear almost immediately, and the patient was able to breathe freely through the nose. Up to this day, eighteen months after the operation, she continues well both as to speech and breathing.

I have since, in a great number of cases, explored the nasopharyngeal cavity, and whenever the peculiar deadness

of pronunciation occurred these growths were *invariably* met with. All the operations on these cases but one had the desired curative effect.

These unhealthy *vegetations*, then, require our serious attention, for, apart from subtracting materially from the good looks of the patient and forming an impediment to speech, they at the same time endanger the important organ of hearing. They may spring from any part of the *naso-pharyngeal cavity*, the septum narium only excepted. Here, at least, I have never observed them. In number, size, and character, they show considerable difference. Cases like the one above mentioned, where the whole cavity was stuffed with them and the posterior nostrils were closed, are exceptional.

Regarding their shape, they are best divided into three forms, viz. the *cristate*, the *cylindrical*, and the *flat* form; and each of these, again, may be found to be either soft or hard, their physical character varying with the locality from which they spring.

The posterior and superior walls of the naso-pharyngeal cavity appear to be their place of election, and in both places they generally assume the shape of soft and brittle *cristæ* or folds of different height, rounded off at their edges, and bleeding readily. On the posterior walls their direction is perpendicular, but it is transverse on the superior wall of the cavity, where they lean against the upper part of the septum. In a few cases the greater part of the so-called fornix, or upper curved part of the posterior wall of the pharynx, where the *pharyngeal tonsil* is situated, has been found occupied by a round and solid, but brittle elevation, varying in thickness, and formed of these same vegetations. Their perpendicular folds mostly cover the whole width of the fornix, and are often so closely packed together that they seem to form one compact but soft mass. At other times they are few in number, and can easily be separated from each other. And lastly, I have observed some cases where, the fornix being quite covered by them, the middle folds protruded to such an extent as to divide the cavity into two lateral hollows, forming, as it were, a septum extending from the upper wall

of the cavity nearly down to the arch of the atlas. Growths of a cylindrical shape are occasionally found on the fornix, but less frequently than the cristate form. They are not so soft as the latter, their surface is smooth, and their pendulous ends are sometimes club-shaped. At other times, again, they have a broad base, and are of a hemispherical shape. Finally, it is to be observed that, in case of the vegetations on this spot being numerous, the lower, more perpendicular part of the posterior wall, is found covered occasionally with soft, cushion-shaped, irregularly situated growths.

On the *lateral* walls of the pharynx the vegetations are generally grouped around the apertures of the Eustachian tubes, and here the cylindrical form prevails. Their quantity is often considerable, their texture hard, their surface polished and at times slightly undulated; they are either pointed or blunt at their extremity, but shorter, as a rule, than the cylindrical growths on the fornix. On the side walls the cristate form also is not unfrequently found. Attached vertically, these growths often cross the cartilage of the tube. They spring from a large base, their sides join in a sharp edge, and they are of considerable hardness. I have in some cases been able to trace their course behind the posterior pillars of the fauces down to the level of the proper tonsils. On the sides of the cavity these growths sometimes appear in the shape of round spots of almost gristly hardness, and their situation appears to be confined to the inner wall of the Eustachian tubes. The growths occurring on the side walls generally differ in this also from those situated on the fornix and upper wall, that they are firmer and not so apt to bleed so freely on being examined with the finger. On the upper surface of the *soft palate* I have only in a few instances noticed any vegetations, but occasionally I have observed a thin resistant fold springing from the posterior edge of the floor of the nares, and stretching backwards for some distance, forming, as it were, a duplicature of the soft palate. In a few other cases I saw round and hard spots on the velum, similar to those sometimes observed on the lateral walls.

The *colour* of these vegetations does not differ materially

from that of the surrounding mucous membrane, which is invariably in a state of congestion. Sometimes they present a yellowish hue. The aspect of their *surface* is generally smooth, either quite shining or velvet-like, but sometimes showing indentations and incisions of different length and direction, causing corresponding prominences, which occasionally look like small bunches of grapes. This state, however, is only observed in the larger cristate vegetations.

In conclusion, it may be stated that the fornix is the locality where the growths are most frequently found; in fact, it is rare to meet with them on other parts, the side walls, for instance, without simultaneously observing them on the posterior wall.

The structure of the vegetations.—The surface of a section of a recent specimen is generally smooth, and shows no laminae or divisions in the tissue. Frequently small, round, yellowish spots may be seen, or cup-like depressions, varying in size, but always small. The juice pressed out of the section is mostly inconsiderable; it is transparent, and contains innumerable lymph-corpuscles. In fine sections of specimens hardened in alcohol or dilute solutions of chromic acid, the light-coloured round spots are much more distinct. The spots themselves are sometimes pierced by a hole varying from the size of the point of a pin to $1-1\frac{1}{2}$ mm. diameter, or they are absent altogether, whilst holes of the same dimensions as the spots take their place.

In preparations gently brushed with a sable-hair brush, and then tinged with carmine, a very transparent delicate network is seen, the meshes of which either contain more or fewer lymph-cells or are entirely empty where the brush has swept these out. In other growths, especially in those of the side-walls, the threads of the network are coarser and the meshes smaller; these growths were further distinguished by the appearance of genuine and sometimes rather firm areolar tissue. The little perforations above mentioned are the cavities of normal or enlarged follicles, from the compact capsule of which the network extends more or less into the cavity, growing more delicate as it proceeds inwards. The

excretory ducts of aciniform glands are also seen in great number, being easily recognised by their beautiful epithelial lining. Most specimens are extremely vascular, containing arteries, capillaries, and, still more, veins, as distinguishable by the direction and character of their parietal nuclei. Some growths even, especially those of the posterior wall, seem to be made up almost exclusively of blood-vessels, between the numerous ramifications of which a scanty areolar network containing lymph-cells is interspersed. The connection between the meshes and the outer areolar coat or perivascular areolar tissue of the blood-vessels can often be easily perceived. The epithelium covering the vegetations is sometimes ciliated, showing wonderfully distinct cilia, and sometimes of the pavement form, composed of very large cells. In some specimens both forms are met with, either separated from each other by a well-marked line or by some transitory epithelial cell-forms. Thus, the microscopical characters may, in a certain degree, point out the spot from which the growth had sprung. Sometimes the follicles are so near the surface that only a very delicate lining membrane exists between their walls and the epithelium.

The microscopic characters of these growths establish their identity with the closed follicles of the mucous membrane from which they arise, the relative quantity of blood-vessels and the presence of real areolar tissue forming an immaterial difference between them. The most prominent structural character of these growths as well as that of the mucous lining of the naso-pharyngeal cavity being adenoid, I propose to designate the former "*adenoid vegetations*." The occurrence of free excrescences composed of the same tissues as lymphatic glands may appear very remarkable, but the fact is certain. Concerning the vegetations on the posterior and superior pharyngeal walls, there can be no doubt as to their constituting an hypertrophied condition of the *pharyngeal tonsil* of the adjacent mucous membrane lining the roof of the cavity. Why the vegetations on the lateral walls and on the upper surface of the soft palate should assume their peculiar shape may be difficult to ex-

plain. That the growths on the posterior walls never, or only in their pedicles, contain traces of areolar tissue, while this seems to be constantly present in those springing from the lateral walls, depends on the comparative thickness of the adenoid structures of the former part.

Simple hypertrophy of the adenoid layer of the pharynx, without the formation of vegetations, may exist, as, for example, in the recessus or sinus faucium laterales, which are then filled up by the same brittle structure, and seem to be altogether absent.

When these adenoid vegetations are present the *surrounding mucous membrane* is often in a morbid condition. Thus, the mucous lining of the posterior wall of the oral part of the pharynx is often swollen or is covered with enlarged follicles or with vertical folds, or exhibits the granular condition known as pharyngitis granulosa. The granulations found in this latter disease vary in size, and the largest sometimes resemble in shape and consistence those soft cushion-like excrescences which I mentioned as occurring in the lower part of the posterior wall of the naso-pharyngeal cavity. The pharyngeal granulations have recently been examined by R. Wagner,¹ and have been found to be also composed of adenoid tissue. Consequently the cushion-like vegetations may be considered as transitory forms between the larger excrescences and the granulations of the visible part of the pharynx.

In these cases the *tonsils* are often in a state of chronic enlargement and more or less hardened.

The *soft palate* and its arches are frequently thickened, approximated to the posterior wall of the fauces, and deficient in mobility.

Lastly, the mucous lining of the *nasal* cavity is found in many cases swollen and reddish, although in extreme cases its secretion is decidedly deficient.

These morbid conditions of the mucous membrane, however, are necessary concomitants or sequelæ of adenoid vegetations, and *vice versâ*. Still, it is rare to find the fauces and nares in a normal state when great numbers of vegeta-

¹ Wagner's 'Archiv d. Heilkunde,' 6 jahrg., 1865, p. 318.

tions exist, showing that the latter are, at least in some measure, due to the same influences which give rise to a chronic inflammatory state of the whole superior portion of the respiratory passages.

Symptoms.—It is obvious that the symptoms caused by the presence of adenoid vegetations must vary according to the number and size of these as well as to the locality in which they are situated. If they are few in number and small, the symptoms may be wanting entirely; if, on the other hand, the growths are so exuberant as to completely close up the air-passage through the nose, the symptoms are marked. The patient will be compelled to keep the mouth open, the nose thereby gradually collapsing and growing thin; the pronunciation will assume the “dead” character, for the voice loses its resonance in the naso-pharyngeal cavity, and it is perfectly impossible to pronounce clearly the nasal sounds. Finally, the expansion of the growths may cause the sensation of a foreign body behind the posterior nares.

But it is not only, nor even principally, upon the bulk and number of the growths that the intensity and extent of the above-described symptoms depend, for their *situation* is of greater importance. If they are only sufficiently large and so situated as to prevent the play of the soft palate during speech, the pronunciation of nasal sounds will be impeded, and breathing through the nose be difficult. Nay, even small vegetations on the lower part of the posterior wall of the cavity opposite to the atlas will sometimes cause faulty pronunciation of a single letter, only observable, perhaps, to a practised ear, and will compel such persons, when not in the act of speaking, to open their mouth more or less frequently, because the normal air-passage is insufficient. In such cases the symptoms, of course, will be more conspicuous when a supervening cold causes the mucous membrane to swell.

The adenoid vegetations keeping the surrounding mucous membrane in a state of chronic swelling—owing to their vascularity—it will not excite surprise that growths situated around the apertures of the Eustachian tubes should be so

very apt to cause hypertrophy and over-secretion of the mucous membrane of those canals. The swelling, perhaps slight and variable at first, gradually increases, becomes habitual, and once propagated to the tympanum will, after some time, cause either a chronic adhesive inflammation of this cavity or a more acute one, when the secretion from the tympanum, being prevented from escaping into the pharynx, will give rise to a purulent inflammation of the middle ear, usually followed by a perforation of the membrana tympani.

It must be stated, however, that the latter form of inflammation occurs much more rarely in connection with adenoid vegetations than the chronic catarrh; and regarding this catarrh, which the late Mr. Toynbee has proved to be one of the most frequent causes of deafness, I am convinced by experience that it is often due to the presence of adenoid growths around the guttural apertures of the Eustachian tubes. Hence, in a chronic catarrh of the tympanum an attentive exploration of the naso-pharyngeal cavity should never be omitted, as the presence of vegetations will materially influence the prognosis and treatment of the disease. This form of deafness will grow worse, even by a slight cold. As long as this affection is not inveterate, the use of the Eustachian catheter will often produce a sudden improvement in the hearing, but unfortunately this is soon followed by a relapse, as the exciting cause of the over-secretion still remains.

Two symptoms may here be mentioned which frequently accompany the use of the ear catheter, and which may almost be called pathognomonic, viz. (1) the stream of air, after having passed freely into the tympanic cavity—as proved by auscultation—will suddenly stop, and after a little while flow on without any obvious reason as freely as before; (2) a gurgling or bubbling sound of thick mucus behind the nasal cavity is heard during insufflation, and sometimes bubbles of the same viscid mucus will appear at the nostril through which the catheter has been introduced. After the removal of the vegetations both these symptoms invariably

disappear, and in one very inveterate case I have even observed a perforation in the membrana tympani to heal up. As vegetations on the lateral walls are not observed without their simultaneous and still more exuberant appearance on the posterior wall, the deafness in such cases will, of course, be mostly found complicated by the above-described defects of speech and respiration. The general rule may be, therefore, laid down, that a *deaf patient who breathes through the mouth and has a thin compressed nose is affected with vegetations in the naso-pharyngeal cavity*, and to confirm this we do not even require to notice the speech.

Apart from the quantity, size, and situation of the vegetations, their consistence is not without some influence on the symptoms. Soft vegetations are more liable to bleed than harder ones, the patient consequently will oftener, on awaking from sleep, *find blood in the mouth*. To this peculiar symptom I have directed attention before. The blood may vary in quantity; it may be pure and fluid, or coagulated, or mixed with mucus; it may be observed regularly or at long intervals; its occurrence is apt to puzzle the medical attendant if he does not know its proper source; and it may be attributed to some more serious cause, especially as the patients are often strumous.

Diagnosis.—The preceding description will suffice to establish the diagnosis of many, especially uncomplicated cases of adenoid vegetations. But, as already stated, such cases are not frequent, the adjacent mucous membrane of the nose and throat being mostly affected at the same time by swelling and increased secretion. The best known and most frequently met with condition, producing symptoms similar to those of adenoid growths, is simple *swelling of the mucous membrane of the nose*. Now, if this be acute, it will soon disappear, either of itself or after some treatment, and then the speech and breathing will be normal as before. But if it be chronic, the resemblance may sometimes become permanent, and will be very striking. It is rare, however, to find the air-passage through the nares entirely and lastingly interrupted, unless polypus be present, and of such a size,

moreover, that it would be easily discovered. An accustomed ear will, in such cases at all events, easily perceive that the speech, difficult as it may be, is more sonorous than when the naso-pharyngeal cavity is encroached upon by adenoid vegetations, those cases, of course, being excepted in which the two diseases complicate each other. Moreover, as already mentioned, the secretion from the mucous membrane of the nose is often wanting when the vegetations obstruct the passage behind; its return, therefore, after the removal of the growths, may have some diagnostic value in certain doubtful cases.

If the *tonsils* are much enlarged, the speech will be dull and thick, but this cannot be easily mistaken for the "dead" pronunciation accompanying adenoid vegetations. Moreover, the presence of enlarged tonsils alone does not, as a rule, impede the respiration through the nose. In those cases only where the tonsils have grown so large as to press back the posterior arches of the soft palate, thereby obstructing the Eustachian tubes, will the diagnosis become difficult. The best way for removing doubt in such cases—which are rare, and mostly complicated by adenoid vegetations—is to excise the tonsils. If, after this operation, the breathing, speech, and hearing should not be restored to their normal state, there must exist some complication, and further examination is necessary.

The greatest difficulty in diagnosis is experienced in those cases where the *soft palate* has, by chronic inflammation, been thickened to such a degree that there is hardly any space left between it and the posterior wall of the pharynx, the mucous lining of which is also generally found swollen in such cases. By the researches of Passavant¹ it has been shown that during the pronunciation of any letter, nasal sounds only excepted, the veil of the palate is raised, and with its superior and more horizontal part meets the posterior wall of the pharynx, which on its side is drawn forward, in a zone opposite the soft palate, by the superior constrictor of the pharynx, which muscle Passavant supposes to be

¹ 'Ueber die Verschlussung des Schlundes beim Sprechen,' 1863.

chiefly used for the purposes of pronunciation. We may, therefore, suppose that in such cases of swelling of the soft palate, and even when in speaking and *breathing* this part and the pharynx do not quite meet, the expired air will nevertheless find difficulty in escaping through the nose; that consequently the resonance of the voice in the naso-pharyngeal cavity will be more or less lost, and that the speech will assume a character resembling that described as "dead." The diagnosis, accordingly, may be doubtful. The only case, indeed, of "dead" pronunciation observed by me, in which the removal of the vegetations was not followed by improvement of the speech, was just one of the kind described, viz. a combination of adenoid growths with swelling of the soft palate, the latter persisting obstinately after the removal of the former.¹ In similar instances, and in those likewise where *no symptoms* of vegetations are observed, but the patient suffers from a disease of the ear, and it is thought of importance to ascertain the presence or absence of vegetations, *physical means of diagnosis* must be had recourse to.

Two means of investigation are here available, viz. rhinoscopy and digital examination. The former, besides requiring special practice and experience, is often difficult, or even impracticable, owing chiefly "to the length and breadth of the uvula, and to the too short a distance between the anterior pillar of the fauces and the posterior wall of the pharynx. In a certain number of cases it is quite impossible to practise rhinoscopy, and it is generally easy, by examining the fauces, and observing whether this space exists to tell beforehand whether an inspection of the nasal fossæ is possible."²

To the above-mentioned general obstacles to rhinoscopy

¹ By way of proving that in this case the swelling of the soft palate was the reason of the faulty pronunciation of the nasal sounds, I passed a thread through each nostril, bringing them out by the mouth and joining the ends in front. By now drawing the threads forward, thereby raising the soft palate towards the hard palate, the patient was able to pronounce *m* and *n* well.

² Mackenzie, 'The Use of the Laryngoscope in Diseases of the Throat, with an Appendix on Rhinoscopy,' p. 148. London, 1865.

must be added, that due to the morbid irritability of the whole fauces.

Now, this morbid irritability, as well as the very short distance between the anterior pillars and the posterior wall of the fauces, caused by the swelling of these parts, are observed exceedingly often, and to a high degree, in cases of adenoid vegetations in the naso-pharyngeal cavity. Moreover, a good view of the cavity cannot, in many cases, be obtained, owing to the vegetations themselves. Their normal seat being the upper and posterior wall of the pharynx, they are only visible in a foreshortened way, not favorable to the discovery of details. The soft folds, of which vegetations on that spot are generally composed, are mostly situated in one plane, and so closely packed together that an approximate estimate of the shape and depth of the folds can only be arrived at by introducing a probe through the nose during examination, and gently parting the vegetations. If the naso-pharyngeal cavity be quite filled by vegetations, the use of the rhinoscope is wholly precluded. If a piece of tape be made to pass through the nose and mouth, and be tied in front of the upper lip, a noose is formed around the soft palate, and by drawing this forward the view into the naso-pharyngeal cavity during rhinoscopy is sometimes much facilitated.

When, however, the vegetations are situated on the side walls, especially when they belong to the cylindrical form, the rhinoscope enables us to study them fully. Unfortunately, vegetations on the side walls are, as a rule, accompanied by a still greater number of growths on the posterior wall.

That rhinoscopy is an insufficient means of examination in this disease is probably to be inferred from the fact that, as far as I have been able to ascertain, we only possess the description of five cases of diseases of the naso-pharyngeal cavity which could be interpreted as cases of adenoid vegetations. Two of these have been observed by Voltolini in Breslau,¹ who has also published several other excellent

¹ 'Die Anwendung der Galvanocaustik im Innern des Kehlkopfes u. Schlundkopfes,' p. 66, seqq. Wien, 1867.

treatises on rhinoscopy. In both those cases Voltolini noticed cylindrical growths in the naso-pharyngeal cavity, situated in the first case on the roof and the side walls, and in the other spread over the whole surface of the cavity, thereby partly filling it, and having broad bases. In the latter case they were also seen on the posterior surfaces of the pharyngo-palatine arches, a situation in which I never detected them. In the first case mention is only made of the deafness of the patient, but in the second there was observed a series of very marked symptoms of the before-described character. In both cases the galvanic cautery was employed by Voltolini with success.

The remaining three observations are by Dr. Benno Löwenberg, of Paris.¹ His description of these cases is very exact. In two of them there were only cylindrical vegetations spreading over a large portion of the naso-pharyngeal cavity ; in the third, cristate growths hanging down from the roof of the cavity were likewise observed. The author describes these growths under the title of "Pharyngitis granulosa," and they were accompanied by very well-marked granulations on the posterior wall of the pharynx. No mention is made of any symptom or treatment.

It must not be supposed that by the above remarks I in any way mean to detract from the value of the rhinoscope in general, or as a means for ascertaining the presence of adenoid growths. For it has proved very useful to myself, not only before operation in cases favorable to its introduction, but also, and principally, after operation (when the pharynx is less irritable and the cavity much more accessible to observation), in order to see how far this had been successful and if any remnants of the growth remained. Rhinoscopy must not, however, be considered as the sole or most convenient mode of examination in cases of adenoid vegetations. Its use is limited, it requires considerable practice, and the

¹ "Die Verwerthung der Rhinoskopie und der Nasenschlunddouche für Erkennung u. Behandlung der Krankheiten des Ohres u. des Nasenrachenraumes," 'Archiv für Ohrenheilkunde von Tröltzsch, Politzer u. Schwartz,' vol. ii, pp. 116 and 117.

results obtained by it are often insufficient for a correct diagnosis of the disease in question.

A digital examination of the parts must, therefore, be superadded; and, indeed, as a general mode of investigation in cases of vegetations, this latter is preferable to rhinoscopy, for it is available under all circumstances, without either requiring practice on the part of the surgeon or preparatory training on the part of the patient; it even succeeds well in children; it reveals with sufficient clearness the number, situation, shape, size, and consistence of the vegetations; lastly, in rendering the pharynx more tolerant, it acts as a good preparation for the operation and for future inspection with the rhinoscope.

The digital examination of the naso-pharyngeal cavity should not be protracted longer than is consistent with the necessary exactness, so as to spare the patient the nausea it is liable to produce. But if it cannot be accomplished quickly, the nausea may be prevented by making the patient breathe deeply and regularly through the mouth during the examination. This examination should also be very gently performed, in order to prevent the bleeding which readily occurs when vegetations are present; besides this, rough handling is apt in nervous persons to be followed by some pain in the back part of the head. The patient being seated on a chair, and the surgeon standing in front and fixing the head with one hand, the index finger of the other hand is cautiously passed over the tongue to the margin of the soft palate. At this point it will generally be arrested for a little while by a spasmodic contraction of the soft palate, but presently, by gentle lateral movements, the finger will succeed in passing by one of the sides of the uvula, and then it easily glides up behind the velum. The finger will now not only detect any unevenness on the posterior surface of the velum, but also any projections on the lower part of the fornix. It is next passed up along the posterior edge of the septum, so as to remain in front of any vegetations situated on the roof of the cavity which press against the upper part of the septum. Then, after having felt around in the posterior nares, where the

lower turbinated bone sometimes comes in contact with the finger, this is turned back to the posterior pharyngeal wall, which, as the place where the vegetations are most frequently met with, requires very careful examination. The finger must here be turned on its side in order to enter into any crevices between the growths, the folds of which, if present, may be counted, their length and thickness ascertained, and their consistence tested by gentle pressure.

Sometimes, in doubtful cases, a slightly curved probe may be passed through the nose to bring the individual vegetations into close contact with the finger. The finger, still held sideways, may be passed next down into the sinus or recessus lateralis, which even in children is of sufficient width to permit of this. Finally, the examination on this side is completed by noting accurately the state of the lateral walls of this cavity. Here the condition of the pharyngeal apertures of the Eustachian tube can be felt, as well as any unevenness in the immediate neighbourhood of the opening. The other side of the pharynx must then be examined in the same manner, either with the same hand or with the index finger of the other hand. But little practice is required to distinguish every feature of the cavity by the touch and to detect even slight abnormalities in its condition. Only in certain cases of extreme nervous irritability have I been obliged to interrupt it.

Statistics.—Regarding the *frequency* of the occurrence of adenoid vegetations, it would seem that, at least in Denmark, it is great; and during eighteen months I have in my private practice observed not less than 102 cases. This number alone would, of course, not permit us to judge of their actual frequency, as persons thus affected will only apply for professional aid if either their speech is very defective or the complaint is complicated by some disease of the ear or by the occurrence of hæmorrhage. Among the above-mentioned 102 cases 52 showed the characteristic dead pronunciation, and 72 suffered from diseases of the ear. Among the 2000 children of the poor public schools of Copenhagen of both sexes (the majority being between ten and fifteen years of age), I found, in examin-

ing the whole number, 20 cases, or 1 per cent., of "dead" pronunciation, and in all of these I met with adenoid vegetations. On the whole, I have the impression that these growths are not more frequent among the poorer classes than among those better circumstanced.

Of the 102 patients mentioned above, the youngest was three and the eldest forty-three years of age. Nothing satisfactory could be ascertained regarding the duration of the vegetations. At the time of observation there were among those 102—

3	patients	under	.	.	.	5	years.
34	„	from	.	.	.	5—10	years.
25	„	„	.	.	.	10—15	„
21	„	„	.	.	.	15—20	„
11	„	„	.	.	.	20—25	„
1	„	„	.	.	.	25—30	„
4	„	„	.	.	.	30—35	„
1	„	„	.	.	.	35—40	„
2	„	„	.	.	.	40—45	„

Of these, again, 52 belonged to the male and 50 to the female sex. The ratio of the sexes was, however, very changeable at different periods of life; thus, of the patients from fifteen to twenty years of age, there were thirteen females and only eight males. This may be accounted for by the fact that young women of that age pay more attention to their defects of appearance than young men of the same age.

Causes.—On the etiology of adenoid vegetations I have but little to say. It seems that they are dependent on the same causes as the affections of the mucous membranes with which they are frequently complicated; and we very naturally feel inclined to regard struma as the most important cause, the more so as the structure of these adenoid vegetations so closely resembles those of the lymphatic glands. I must state, however, that only in a few cases have I observed other signs of a present or past strumous condition.

Local irritation of the mucous membrane of the naso-

pharyngeal cavity appears to have some influence on the development of a luxuriant growth of the adenoid tissue. This circumstance would, at all events, account best for the fact that among four individuals with cleft palate whom I latterly had occasion to examine three had vegetations, especially on the posterior wall. These cases enabled me to compare the results arrived at by rhinoscopy and digital examination, for in all three cases the posterior wall could be easily examined in its whole extent without the aid of a speculum. In one case, a lad thirteen years of age, I could observe the enlarged pharyngeal tonsil lying on the posterior wall, about the shape and size of half a plum, and of a brilliant red colour. On its surface shallow grooves were observed, indicating the crevices between the thick and soft lobes constituting the tumour. These three individuals all had very large clefts in the hard palate, accompanied by harelip. The fourth case, a girl of fifteen years, and *without* any vegetations, had no harelip, and the narrow cleft of the soft and hard palate only reached forwards to opposite the bicuspid teeth. In this case the naso-pharyngeal cavity being less exposed to external irritation from the food and cold air, the condition was not so favorable to the exuberant growth of the adenoid tissue. The number of my observations is, however, too small for determining the true relation between cleft palate and adenoid vegetations. But the matter deserves further investigation. I may here also call attention to the fact that, as a rule, subjects with cleft palate hear badly. Dieffenbach tried to explain this concurrent deafness by the circumstance that the muscles destined to act on the Eustachian tubes (*tensores et levatores palati*) were in such cases without their proper *point d'appui*. I would suggest that in a number of similar cases the deficiency of hearing might be due to a luxuriant state of the adenoid tissue in the naso-pharyngeal cavity. In one of the three cases alluded to I found the recessus laterales filled by such masses, and the mouths of the Eustachian tubes converted by the same into very narrow slits, which by the slightest catarrhal swelling would be closed altogether, and the patient's hearing was at times defective. In the fourth

case (the girl without harelip) the hearing was very perfect, and had never been bad, and the apertures of the tubes were in a normal condition.

Prognosis.—Respecting the prognosis of adenoid vegetations, the only questions are as to their natural course and the danger that might accrue to other organs by their presence. I have never had an opportunity of observing the undisturbed course of adenoid vegetations, and I cannot give an opinion as to their possible spontaneous disappearance or shrinking. It is probable, however, that this may be the case at an advanced age, for according to my observations we find many more children and young people affected with the characteristic speech belonging to this complaint than persons of a more mature age. I have repeatedly mentioned the influence exercised by vegetations on the hearing, especially by those attached to the sides of the pharynx. If, then, as happens in a number of cases, the removal of these growths restores the hearing which has been defective for a considerable time, we may safely assume that the swelling of the mucous membrane around these very vascular new formations has been the cause of the deficiency of hearing.

Treatment.—I am not aware that any internal remedies are able to check the growth of these adenoid vegetations of the pharynx. Iodine naturally suggests itself. But having once established the diagnosis, and considering the state of the middle ear at all times in jeopardy, I have never deferred the safe surgical treatment to the administration of uncertain internal remedies.

When the vegetations are small and of soft structure I employ *cauterization* with the solid nitrate of silver. In doing this I use firm, but light, metal holders fixed in a handle and curved at the other end, so that they may be passed behind the soft palate. They are flat at the extreme end and variously twisted, so as to be adapted to the position of the part to be cauterized, viz. backwards and upwards if the posterior wall is to be touched, laterally and towards the

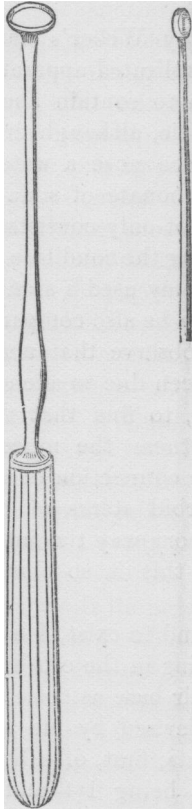
right or the left for the side walls, and so forth. The flattened end is dipped into melted nitrate of silver, care being taken to warm it previously, the caustic being liable to fall off if the metal is cold. The tongue of the patient being held down, the caustic is applied to a greater or less degree and extent according to circumstances.

Besides this cauterization, I also employ Weber's naso-pharyngeal douche, or instead of that complicated apparatus I use an india-rubber bottle, large enough to contain about sixteen ounces of fluid, and having an elastic, although firm, tube and nozzle. By this I inject into the nose a watery solution of common salt, or of the bicarbonate of soda (1 part to 500). The action of this douche not only consists in washing away the mucus, but also in altering the condition of the secreting surfaces. The late Dr. Yearsley used a similar "elastic tube or bottle," the effect of which he also compared to that of Weber's douche. I may here observe that many cases described by Yearsley seem to have been due to adenoid vegetations.¹ One is surprised, however, to find that this author, after describing with such exactness the mucous membrane of the nose and throat, and the connection of the affections of these membranes with morbid states of the tympanic cavity, only mentions in a cursory way the intervening naso-pharyngeal cavity, although this is so closely connected with the Eustachian tubes.

Whenever the larger vegetations are found to exist, I have recourse to an *operative procedure*, consisting in the crushing or scraping off of the tumours as near their base as possible. For this purpose I use an instrument devised by me and represented in the annexed cut. It consists, first, of a little ring of a transverse oval shape, its axes being 1·4 and 1 centimètre respectively, and its breadth 1·5 millimètre, having one edge sharp, although not absolutely cutting, and the other one rounded off; and secondly, of a slender, stiff, but at the same time flexible stem, 10 centimètres long, bearing the ring at one extremity fixed into a roughened

* 'Throat Ailments,' &c., pp. 75—78. Eighth edition, 1867. Also 'On Throat Deafness.' Tenth edition, 1868.

handle at the other. The pharynx having previously been rendered tolerant by repeated examinations, the patient is placed in a chair. An assistant holds the head, which is to be slightly bent forward, and the patient is requested to



Front and side view of the instrument, one half the real size.

breathe deeply and regularly through the mouth during the operation. The surgeon, standing in front of the patient, introduces the left index finger into the naso-pharyngeal cavity, and with the right hand passes the instrument through the nose, keeping the long axis of the ring perpendicular, and making its blunt edge glide along the septum. In case the operation has to be done on the side wall, the stem of the instrument, which is made of soft steel, is to be bent towards the corresponding side. The point of the index finger and the instrument having been made to meet behind the posterior nares, the finger should now press each vegetation separately upwards against the ring, while the latter should be moved in a downward direction, so that its sharp edge crushes them off as near their base as possible, the nail or the point of the finger serving as a *point d'appui* for the instrument. The outer layer of the growths is frequently observed to resist the instrument much more sensibly than the interior, more fragile portion. In this manner the operator works gradually on (the finger all the time controlling

the movements of the instrument), until everything necessary has been removed, or the patient becomes fatigued by holding the mouth open so long, or the bleeding compels the suspension of the operation. The bleeding is always considerable.

The blood flows through the patient's nostrils, and it is therefore well to let him hold a basin under the nose, which at the same time prevents him from taking hold of the instrument or the surgeon's hand. As a rule, the bleeding very soon stops; but to facilitate this, as well as to wash out the clots from the cavity after the removal of the vegetations, a strong stream of water should be injected over the bleeding surface. This is done by means of a tube shaped like an ear-catheter, closed at its extremity, but perforated at the sides by a number of holes, through which the water is pumped by an ordinary valved or syphon syringe. The patient may also be desired to blow his nose strongly into the basin, so as to force out the blood as well as the vegetations which have been detached. Finally, the bleeding spots should be well cauterized by means of the caustic holders already described.

The operation itself is never a very painful one. It causes a headache, especially at the back of the head, similar to that which follows the digital examination and the cauterizing of the parts; it may also produce a slight stupor a few hours after the operation, but this disappears the next day. I have never observed any other accident connected with the operation, unless some burning and irritation of the throat may be so called, although I have performed it above a hundred times.

One operation rarely succeeds in removing all the vegetations, so that it often requires to be repeated. I at first did this too soon, believing that the soft and uneven swelling which always follows the operation was the remains of vegetations. But the swelling disappears after a few days, and then any remaining vegetations can easily be detected. The vegetations on the fornix of the pharynx can be removed most easily, but those of the side walls often require a second operation, especially the hard and cristate, and also the cylindrical, wart-shaped, hemispherical kinds. I have sometimes had recourse to an instrument curved like a catheter, and of the shape of a lithotrite, but with spoon-shaped and cutting ends.

In some few instances neither the operation nor the *after*

treatment, by the use of caustics and the pharyngeal douche, has succeeded in removing all traces of the vegetations. In such cases the best method probably would be the employment of the galvano cautery as used by Voltolini, but I myself have never employed it.

The good *effects* of the operation generally appear quickly. As soon as the posterior nares are cleared the voice becomes more sonorous, the pronunciation clearer, and, as the respiration now occurs through the natural channels, the expression of the face is at once changed in a surprising manner. If any organic alterations in the tympanic cavity have already taken place, owing to the catarrh extending so far, the effect of the operation on this part may be trifling. But if such changes have not taken place, the hearing will be considerably improved, although the disease has continued for a long period, and I have even observed defects of the membrana tympani to be repaired after the operation. The anomalous signs above mentioned as occurring during the inflation of the Eustachian tube and tympanum by the air-catheter invariably disappear. In recent cases the hearing can be perfectly restored to its normal state, even without the employment of Eustachian catheterism. As a matter of course, the surrounding mucous membranes, which generally suffer at the same time, must have their proper share of therapeutical attention.

If the vegetations are completely removed by operation, I have reason to believe that the cure will be radical. At least I have never observed a *recurrence* of the complaint during the year and a half which have elapsed since I performed the first operation. It is true that I have paid especial attention to the after treatment, and continued it for a long time, and this plan I most urgently recommend to those of my confrères who may have an opportunity of removing the local disease by the above-described little operation.

It would be easy to illustrate the preceding descriptions by reports of cases from my journal, some occurring with and others without an accompanying defect of hearing. I trust, however, that I have said enough to induce others to apply

themselves practically to a complaint which, although not dangerous, is still very troublesome and important in its consequences.

DESCRIPTION OF PLATE V.

Adenoid Vegetations in the Naso-Pharyngeal Cavity.

Fig. 1. Cylindrical vegetations on right lateral wall of the nasopharyngeal cavity, covering the opening of the Eustachian tube: remains of vegetations after operation in fornix and left lateral wall (rhinoscopical view).

Fig. 2. Microscopical view of a section of the adenoid vegetation from the fornix, $\frac{300}{1}$.

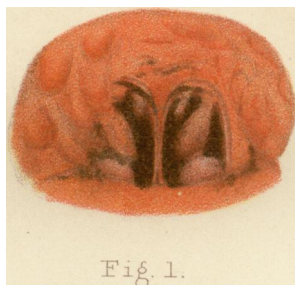
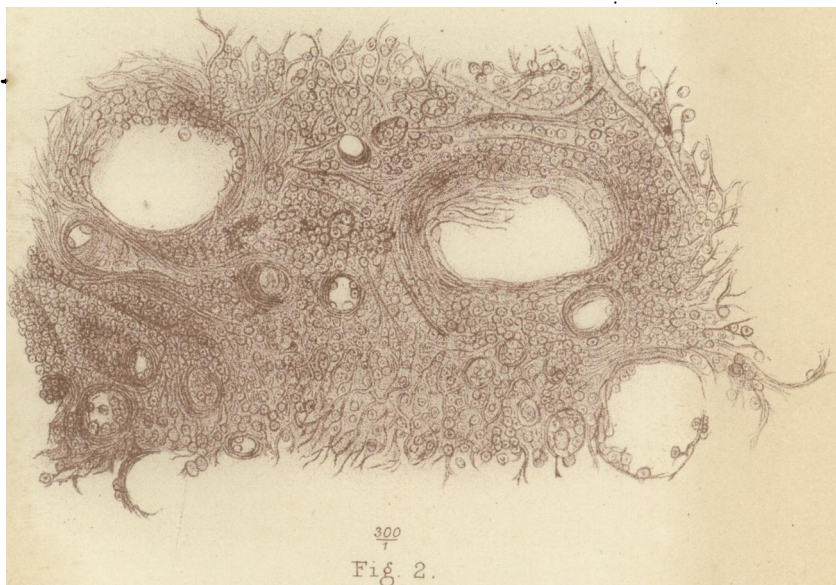


Fig. 1.



$\frac{300}{1}$
Fig. 2.